Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VI
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 18-20. September 2017.

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Dear Colleagues,

We have great pleasure to welcome you to the Advanced Ceramic and Application Conference VI organized by the Serbian Ceramic Society in cooperation with the Institute for Testing of Materials, Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy and Institute for Technology of Nuclear and Other Raw Mineral Materials.

Advanced Ceramics today include many old-known ceramic materials produced through newly available processing techniques as well as broad range of the innovative compounds and composites, particularly with plastics and metals. Such developed new materials with improved performances already bring a new quality in the everyday life. The chosen Conference topics cover contributions from a fundamental theoretical research in advanced ceramics, computer-aided design and modeling of a new ceramics products, manufacturing of nanoceramic devices, developing of multifunctional ceramic processing routes, etc. Traditionally, ACA Conferences gather leading researchers, engineers, specialist, professors and PhD students trying to emphasizes the key achievements which will enable the wide speared use of the advanced ceramics products in High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, prosthesis, etc.

Serbian Ceramic Society has been initiated in 1995/1996 and fully registered in 1997 as Yugoslav Ceramic Society, being strongly supported by American Ceramic Society. Since 2009, it has continued as Serbian Ceramic Society in accordance to the Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in the South-East Europe, with members from more than 20 Institutes and Universities, active in 16 sessions, by program and the frames which are defined by the American Ceramic Society activities.

For the first time Advanced Ceramic and Application Conference hosting delegations from Republics of Ghana, Nigeria, Niger and Cameroon with the idea to connect, share and provide positive influence to the scientific and industrial communities all around world.

Prof. Dr Vojislav Mitić
President of the Serbian Ceramic Society
World Academy Ceramics Member
European Academy of Sciences&Arts Member

Prof. Dr Olivera Milošević,
President of the General Assembly of the Serbian Ceramic Society
Academy of Engineering Sciences of Serbia Member

Conference Topics

- Basic Science & Sintering of Ceramics
- Nano, Bio- & Opto Ceramic
- Electro & Multifunctional Ceramics
- Magnetic, Catalytic & Composite Materials
- Renewable Energy, Heritage & Archeology
- Industrial Talks

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present in the world for several decades already. Nevertheless, in Serbia the discipline is just at the beginning of development. In this paper I'll try to explain the importance of the ethnoarchaeological research at local level and in wider, regional frames.

INV-REHA2
Fluorine doping of cathode materials for rechargeable batteries

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In the continuing search for alternative cathode materials for rechargeable batteries with improved electrochemical performances, there is a need for a versatile approach that will address concerns regarding low reversible capacity, poor capacity retention, low operating voltage and structural instability. So far, a lot of investigation was focused on cation doping. On the other hand, there is much less investigation on anion doping of cathode materials. Taking olivine-type $LiFePO_4$ and layered Na_xCoO_2 as example materials for lithium- and sodium- ion batteries, respectively, the influence of fluorine doping on both the structure and the electrochemical performances was examined. The crystal structure refinement revealed that fluorine incorporation preserves the parent structure. Furthermore, small oxygen replacement by fluorine ions changes electronic structure and consequently modifies electrical properties.

INV-REHA3
Spectroscopy study of $LiFePO_4$ catode materials for Li-ion battery prepared in the thermo-acoustic reactor

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$LiFePO_4$ is a potential cathode candidate for the next generation of secondary lithium batteries. The iron based olivine type cathodes (mainly lithium iron phosphate, $LiFePO_4$) are regarded as possible alternatives to cathodes based on rare metal composites. Industry uses mostly methods in solids and less hydrothermal synthesis. The pilot reactor was built according to the principles of the thermos-acustic burner. It consists of a burner on the basis of the Helmholtz resonator. The sample synthesized in incomplete combustion and resonance mode of reactor and calcined at 700°C. The obtained samples were characterized by X-ray diffraction, Raman and Mössbauer spectroscopy. The aim of this work is to show that is possible to achieve a desired crystal phase with only a proper mode of operation. The seemingly rapid transformation of amorphous into pure phase material was attributed to two mechanisms; increasing the number of particles due to the reduction in size and a larger number of collisions between particles due to the strong turbulent flow associated with explosive combustion.